Understanding the Increased of Child Height for Age Index during the Decline Coverage of Posyandu Using Intrinsic, Extrinsic and Macro-Environmental Factors Approach: a Literature Review

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ABSTRACT

In Indonesia, the village health post (Posyandu) is a community driven organisation that provides basic health and family planning services such as maternal and child health (MCH), nutrition, family planning, immunization and diarrhoeal disease control (BKKBN, 2004). During 1997 to 2000, or during the monetary crisis, it was revealed from the IFLS study that there was a 12% drop in the usage of Posyandu for both boys and girls (Strauss, et al. 2002). Almost all Posyandu services decline rapidly, the coverage of child growth monitoring dropped by 14% between 1997 to 2000, and the possession of growth monitoring cards (KMS) dropped by 24% (Marks, 2003). However, Strauss, et al. (2003 cited in Marks 2003) reveal that during the period when Posyandu coverage and attendance were decreasing rapidly, child height increased which indicated a better health and nutritional status (Marks, 2003). This literature review aims to give a better insight of understanding the paradox using three factors approach, which are: intrinsic, extrinsic and macro-environmental factors. The limitation of internal factors within Posyandu believed to be the key of declining coverage. Among intrinsic factors are: the quality of kader, and the displacement of the family planning program (Rusydi, 2005). The role of private health care providers or NGOs, and shifts in consumer preferences are thought to be responsible for the improved child health indicated by increased height for age index. Broader macro-environmental factors also have had a significant impact, the monetary crisis that hit Indonesia in 1998 resulted in a reduction of both men's and women's participation in a variety of community development activities such as neighborhood improvement projects and the Posyandu (Frankenberg, Thomas and Beegle, 1999). Even with a broad spectrum of variability among Indonesian, nonetheless, this approach could be regarded as a template for site to site evaluation.

Key words: *child, height for age, coverage, posyandu, intrinsic, extrinsic, macro-environmental factors*

INTRODUCTION

The *Posyandu* is the main direct nutrition intervention program with national coverage in Indonesia (Marks, 2003). It has been playing a pivotal role in delivering community nutrition programs in Indonesia since the mid 1980s (Marks, 2003). Nutritional services provided by *Posyandu* are: child growth monitoring, the delivery of Vitamin A supplementation for infants and iron tablets for pregnant women, and supplementary feeding practice (Latief, *et al*., 2000). Program implementation, which is conducted by the village volunteers or *kader* (Elfindri and Dasvarma 1996) with assistance from Public Health Centre (*Puskesmas*) personnel (Marks, 2003), takes place mainly at the grass roots level. One *Posyandu* covers approximately 100 children under five years of age (Shield and Hartanti, 2006). During the period of the 1980's to the early 1990s the coverage of *Posyandu* grew strongly and was reported to cover more than 65,000 villages in all 27 provinces in 1989 (Marks 2003). According to Soekirman, *et al*. (1992), there were around 250,000 *Posyandu* in 1990, with each village having more than one (Marks, 2003).

However, the number of *Posyandu* declined significantly during 1994/1995 to 1996/1997 by about 5,918 (Irawati, 2000). Moreover, of those remaining, 22.3% were considered to be less active (Irawati, 2000). Findings from the preliminary data of the Indonesia Family Life Surveys (IFLS) in 1999 show a dramatic decline in attendance at *Posyandu* by children under five from 46.7% in 1997 to 27.7% in 1998 (Frankenberg, Thomas and Beegle, 1999). The strongest evidence of the decline of *Posyandu* came from the 2002 Indonesian Family Life Survey, which revealed a 12% drop in the usage of *Posyandu* for both boys and girls between 1997 and 2000 (Strauss, *et al*., 2002). The provision of almost all *Posyandu* services also declined considerably: the coverage of child growth monitoring dropped by 14% between 1997 to 2000, and the possession of growth monitoring cards (KMS) dropped by 24% (Marks, 2003).

Strauss, *et al.* (2003 cited in Marks 2003) reveal that during the period when *Posyandu* coverage and attendance were decreasing rapidly, child height increased which indicated a better health and nutritional status (Marks, 2003). According to Strauss, *et al*. (2002), during the period 1997 to 2000 the coverage of immunization among

Indonesian children improved from about 35% to 55%. In contrast, the uptake of vitamin A decreased from 65% to 55%. Strauss, *et al*. (2002) argue that the drop in the uptake of vitamin A was an indication of the declining coverage of *Posyandu* that for so long has played an important role in its distribution. This paradox raises a concern about the effectiveness of *Posyandu,* which have long been and continue to be, the backbone of government programs for the promotion of good nutrition and health, prevention, early recognition, treatment and referral of malnutrition and disease (Latief, *et al*., 2000).

Despite the downward trend of the overall national figures, in some areas, the utilisation and quality of *Posyandu* remain excellent. The preliminary results from UNICEF/UnHas study cited in Latief, *et al*. (2000) confirm that there is heterogeneity in *Posyandu* usage across the country. The study reveals that *Posyandu* attendance in East Java is still high (97%), whereas in West Sumatra and South Sulawesi it is lower at 83% and 78% espectively. The rate of KMS possession is also higher in East Java than in the other two provinces (Latief, *et al*. 2000).

UNDER-FIVES' NUTRITIONAL STATUS

As shown in figure 2.3, between 1997 and 2000, the percentage of stunting or height-for-age using Z score less than –2 was reduced by 10% for boys and 6.8% for girls aged 3–59 months (Strauss, *et al*., 2002). Stunting reflects insufficient height gain relative to age (WHO 1995a cited in Gibson, 2005), that results from long term inadequate food intake, poor dietary quality, increased morbidity or a combination of these factors (Gibson 2005). Weight-for-height, a more sensitive index of changes in nutritional status than height-for-age (Gibson, 2005), shows no change between 1997 and 2000 (Strauss, *et al*. 2002). However, between 1997 and 2000 the percentage of anemic children aged 12–59 months increased from 51.9% to 57.4% for boys and from 48.8% to 52.7% for girls (Strauss, *et al*., 2002).

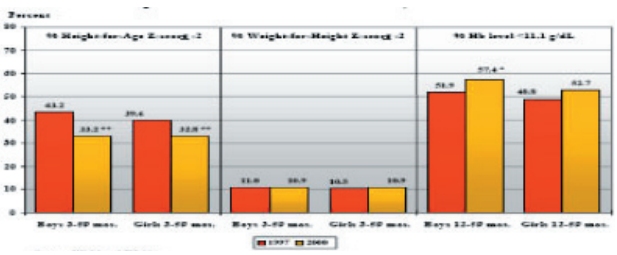

Figure 1. Preschool Child Health Outcome, 1997 and 2000

INTRINSIC FACTORS

The next step to explain the declining coverage of *Posyandu* is to understand the intrinsic factors within the *Posyandu* itself. Intrinsic factors are defined here as factors within *Posyandu* that might contribute to a decline in their use. Such factors might be: the characteristics and the quality of *kader*, the decreasing participation of people as volunteers, mothers' knowledge, perceptions and expectations of *Posyandu*, and the assistance provided by sub-district public health centers to support *Posyandu* activities. Other important intrinsic factors are the services and the structure of the *Posyandu* itself. Thus, the literature review begins with an explanation of these intrinsic factors, including the history of *Posyandu* and its services.

History of *Posyandu*

Posyandu originated in the early years of the 1970s in several parts of Java, under a variety of names such as *"Taman Gizi"* or neighborhood nutrition clubs in Banjarnegara, a monthly social hamlet meeting or *"arisan"* in Godean, Salatiga, and with the introduction of the concept of weighing infants and children in the sub-urban village of Kerten rather than in the clinic by YAKKUM Community Development Foundation in Solo, Central Java (Rohde and Hendrata, 1982). The concept was then adopted in the second five year plan of 1974-1979 by the Ministry of Health (Rohde, 1993) with the revised Applied Nutrition Program, covering more than 800 villages across the country (Rohde and Hendrata, 1982) in the form of the family nutrition improvement program (UPGK) (Elfindri and Dasvarma, 1996). Later, with strong support from MoH and BKKBN, family planning program and other primary health services were added and in 1984 the UPGK was transformed into *Posyandu* (Marks, 2003). It is important to realise that the basic idea of *Posyandu*, according to its history and development, is of a community social gathering that involves health and nutrition education. Changes in the services provided, convenient availability of external health services, and also, the impact of environmental changes, might affect the predisposing, enabling and reinforcing factors to be involved in *Posyandu* activities, not only for mothers, but also for the volunteers and *Puskesmas* personnel.

Posyandu Services

The *Posyandu* is the main direct nutrition intervention program with national coverage in Indonesia (Marks, 2003). The major program implemented in *Posyandu* includes nutritional monitoring (growth monitoring, nutritional education/advice, and supplementary feeding), maternal and child health (MCH), control of diarrhoeal disease, immunization and family planning (BKKBN, 2004). Program implementation, which is conducted by village volunteers or *kader* (Elfindri and Dasvarma, 1996) with assistance from Public Health Centre (*Puskesmas*) personnel (Marks, 2003), takes place mainly at the grass roots level. One *Posyandu* covers around 100 children under five years of age (Shield and Hartanti, 2006). The

original structure of *Posyandu* was based on the four-table mechanism with the focus on growth promotion (Rohde, 1993). The first to the fourth table consisted of the following activities: registration, weighing, charting, and health and nutrition advice (Rohde 1993).

In the past, and perhaps until the present, increased involvement of health workers in *Posyandu* medical services resulted in increased demand from and participation of mothers in *Posyandu* (Rohde, 1993). To accommodate the demand, the fifth table was added to *Posyandu* activities, namely, delivery of medical services. Unfortunately, this had a detrimental effect as mothers increasingly came to *Posyandu* to receive medical services rather than to share information and conduct motivational sessions between themselves (Rohde, 1993). Rohde (1993) argues that *Posyandu* has changed from a sort of social gathering in the village, symbolised by the preparation of common nutritious meals and extensive interaction between mothers and their children. Instead it has transformed to a formalised set of health related delivery activities (Rohde, 1993). It is hypothesized that since the economic crisis hit, mothers have had less interest in attending *Posyandu* that do not have medical services.

Opening Hours

According to Kollmann (1992), the opening hours of *Posyandu* are from 11 am to 13 pm. His study shows that for mothers who worked in an office or ran a shop, the opening hours of *Posyandu* were inconvenient since it coincided with their time of work (Kollmann, 1992), whereas mothers who worked in agriculture had more flexibility to adapt to the *Posyandu* opening hours as their work was already only economic activityavailable for mothers is in agriculture, while in a much richer village the range of jobs is more diverse. Hence, part of the reason why the coverage of *Posyandu* is higher in oorer villages is the flexible working hours of mothers (Kollman, 1992). This hypothesis is aligned with the current situation where more mothers have entered the workforce since the beginning of the economic crisis in 1998. It seems that they have less flexible working hours, and therefore are having more difficulties in attending *Posyandu* than prior to the crisis.

Characteristics of Volunteers (*Kader*)

Posyandu was originally regarded as a set of community-initiated activities run by village volunteers or *kader* with back-up from personnel of the Public Health Centre (*Puskesmas*) (BKKBN 2004). Latief, *et al*. (2000), in their systematic review, cited data from UNICEF-UnHas study that noted the characteristics and tasks of *Posyandu kader*. Among the characteristics of *kader* are that they are married women (71%) aged 28–35 years old, and mostly housewives with no other job (60%) (Latief, *et al*., 2000). Based on the UNICEF-UnHas study, the characteristics of *kader* vary widely among the three provinces involved (SumBar, JaTim, and SulSel) (Latief, *et al*. 2000). About 40% of *kader* have had no in-service training in the past year, and less than 2% received more than 3 days' training (Latief, *et al*. 2000). As a result, significant numbers of *kader* have some fallacious or incorrect knowledge or understanding of nutrition. Almost 50% of *kader* do not know that complementary feeding should be introduced after infants reach four months old, 22% do not know that breast feeding should begin immediately after birth, and there are also some incorrect understandings related to food beliefs (Latief, *et al*., 2000). Latief, *et al*. (2000) concluded that there is limited standardisation and quality assurance of the training, the competencies (knowledge, skills and abilities) and in the performance of tasks by *Posyandu kader.* It is possible that the declining coverage of *Posyandu* is partly because of the perception among mothers that *Posyandu* volunteers lack competency.

Volunteers' (*Kader*) Participation

Since the economic crisis began in 1998, participation in a variety of community development activities like neighborhood improvement projects and *Posyandu* has reduced for both men and women (Frankenberg, Thomas and Beegle, 1999). Low education level appears to be a more important determinant of wonen's participation in *Posyandu* activities in 1998 than in 1997, in other words after rather than before the crisis (Frankenberg, Thomas & Beegle, 1999). It may be that the experienced volunteers discontinued their involvement in *Posyandu* because they preferred to enter the workforce. If so, the problem then extends to the lack of skills and knowledge possessed by their replacements. Hence, mothers might be unsatisfied with the service of *Posyandu*, and as a result may choose another "capable" health care provider.

Mothers' Education, Knowledge, Perceptions and Expectations

According to the World Bank report in Indonesia Policy Briefs (2005), surveys reveal that mothers' nutritional knowledge is associated with their ability to prepare more micro-nutrient rich household meals (World Bank, 2005). However, the level of such nutritional knowledge is not strongly associated with their formal education and income level (WorldBank, 2005). This indicates the importance of nutritional information or education in enabling improvements in diet, information that in the past has effectively been delivered through the *Posyandu* network (World Bank, 2005).

The relationship between mothers' education and their utilisation of *Posyandu* is more complex. Rationally, it might be presumed that mothers with better education would have more knowledge about the program and therefore more regularly attend *Posyandu* (Kollmann, 1992). However, in Kollmann's (1992) study, such a hypothesis is not confirmed. Kollmann (1992) suggests that educated mothers more often have better jobs than the

uneducated. Because of their employment, these mothers do not have the time to go to *Posyandu* but since they earn more money than mothers without employment, they are able to spend more money on other forms of health care (Kollmann, 1992).

The Role of Public Health Centre (*Puskesmas*) Personnel

In performing their duties in delivering *Posyandu,* the volunteers are assisted by public health centre personnel (Kollmann, 1992). In the *Puskesmas,* several staff are rostered to attend *Posyandu* monthly on a fixed day (Kollmann, 1992). The UNICEF-UnHas study shows the *Puskesmas* staff are involved 87% of time in *Posyandu* activity and training of the *kader* (Latief, *et al*., 2000). However, many regard *Posyandu* activities as a burden that they must supervise (BKKBN, 2004).

EXTRINSIC FACTORS

Surprisingly, the declining coverage of *Posyandu* is not followed by the worse case scenario of detrimental child health outcomes. Quite the contrary, child health outcomes are improving at the same time as *Posyandu* attendance is decreasing. Thus, it is suggested that there are factors outside *Posyandu* that might contribute to the declining usage of *Posyandu* as well as factors that might contribute to the improvement in child health outcomes. Among those factors considered are the presence of other health facilities, particularly government health services such as Public Health Centres and Public Hospitals; Private Health Services; and Non Government Organisations. In villages where there are no other health facilities available, mothers do not have the opportunity to choose different health services. In this case, according to Kollmann's (1992) study, mothers were quite satisfied with *Posyandu* services. The attendance at the *Posyandu* monthly gathering was higher in these villages than in villages with other health facilities (Kollmann, 1992). In villages where other health facilities were available, some mothers reported that the *Poyandu* service was unsatisfactory and preferred to go to other facilities even though it was more expensive. Some mothers agued that the volunteers' skills were insufficient and the equipment was limited (Kollmann, 1992).

Government Health Services

Two fixed facilities operate within the organisation of the Ministry of Health: hospitals and health centres (*Puskesmas*). The quality of services and availability of vaccines, antibiotics and some equipment offered by *Puskesmas* was improved between 1997 and 2000 (Strauss, *et al*., 2002). However, the results from IFLS as reported by Strauss, *et al*. (2002) show constant changes in the usage of *Puskesmas* services, 10% for children under-five and 5% for older children. Nevertheless, the provision of tests and services by *Puskesmas* is still higher than by private health care practitioners such as private doctors, clinics or midwifes (Strauss, *et al*., 2002).

In 1998 the total number of bed in all public hospitals was 123,168, or almost double that of 1986 (MOH, 2000). However, there are no hospitals below the district level. Given geographical barriers, problem of transportation and the remoteness of the area, people living in rural areas have difficulties in accessing public hospital services. No publication could be found in the online databases that examined the correlation between the declining coverage of *Posyandu* and the improvement of child health outcome with the usage of public hospital services. However, with the increased number of *Puskesmas* and public hospitals over the last few decades, the distribution of health services has been much better in recent years. Therefore, if the finding from Kollmann's (1992) study is applicable to the current situation, the declining coverage of *Posyandu* might be, in part, due to the better distribution of health services, resulting from the increased number of *Puskesmas* and public hospitals.

Private Health Services

Like many other developing countries, higher population densities are an indication of a more developed private sector because large numbers of even very poor people can provide a sufficient market for certain types of private sector providers (McPake and Mills, 2000). Over half of Indonesia's hospitals are privately owned, many by religious organisations or industries (USAID, 1988). With many private health care facilities available, the choices for people to seek medical treatment seem to be expanded (Brotowasisto, *et al*., 1988).

The role of traditional healers and medicines has a long history in the health seeking behavior of the Indonesian community; it began from ancient civilisation and still exists today in certain communities. However, no online publication was found that described the relation of the existence traditional healers and medicines with the declining coverage of *Posyandu* or the improvement in child health outcomes.

The results of the 2002 IFLS show increased usage of private practitioners by women seeking supplies of contraceptive pills or injections (Strauss, *et al*., 2002). Moreover, between 1997 and 2000 the use of midwife practitioners, whether private or village based, increased about 10% (Strauss, *et al*., 2002). These findings, although not directly related to child health outcomes, might indicate that part of the declining coverage of *Posyandu* could be because private providers are better able than *kader* to meet mothers' needs for family planning services, something that in the past was effectively provided by the *Posyandu.*

Non Government Organisations (NGOs)

Numerous foreign NGOs are working to improve child health outcomes in Indonesia such as: CARE, Community Outreach Initiatives (CORI), Helen Keller

International (HKI), Plan International, and Johns Hopkins International Program on Education and Reproductive Health (JHPIEGO) (Latief, *et al*., 2000). Each NGO runs their programs in a selected location across the country, which might provide similar or specific services from *Posyandu* activities. It is suggested that the existence of foreign NGOs in particular communities might contribute to the declining usage of *Posyandu* since NGOs provide more attractive services with better trained volunteers. In contrast, local NGOs seem to have had an influential role in encouraging the use of *Posyandu.* It is believed that the potential contribution of local NGOs lies in the capacity to reach people at the grassroots level who are not yet covered by the government's community information services (Munir, 1990). At least up to 1990, Munir (1990) argues that religious organisations with their specific characteristics could play the role of motivators, facilitators, and catalysts for child survival and development through the promotion of *Posyandu* usage. In 1986, Indonesian government and UNICEF carried out a special project called The Child Survival Project (CSP) involving 12 religious NGOs as implementing agencies. The reason for choosing religious organisations was that religion has a strong influence on people's daily lives in Indonesia. In three years the program successfully enhanced community awareness of diarrhoea and immuniseable disease, stimulated the use of ORT and improved EPI (Expanded Program for Immunization) coverage through motivating mothers in *Posyandu* and *Puskesmas* attendance (Munir, 1990). However, the continuity of such community support at the completion of the program is not reported in Munir (1990) article. It may have ceased when the program ended; hence, perhaps the anecdotal report of the decline coverage of *Posyandu* attendance in the early 1990's might be, in part, related to the discontinuity of support from religious NGOs.

Family Planning Post (*Pos KB*)

From the mid 1980s, the family planning program was included in *Posyandu* activities, but recently, following decentralisation, the BKKBN disconnected the program from *Posyandu* and held their own family planning post in every village (PR 2006). It is believed that the decline of *Posyandu* coverage is partly due to the displacement of the family planning program from *Posyandu* activities.

Family Welfare Movement (PKK) and LKMD

LKMD (*Lembaga Ketahanan Masyarakat Desa*) is a village organisation headed by the village leader. It has a strong influence on the organisation of *Posyandu* and in passing the information regarding *Posyandu* to the community. PKK on the other hand (*Pembinaan Keluarga Kesejahteraan)* is a semi-governmental women's organisation which aims is to enhance the welfare of the family by involving women in the general development process (Kollmann, 1992). The fourth program of the PKK deals with health and family planning, activities which in the past were concentrated in the *Posyandu* program (Kollmann, 1992). Moreover, most of *Posyandu* volunteers, as reported in the Kollmann (1992) study, were PKK members. Kollmann (1992) argues that PKK was the driving force behind the success of *Posyandu.* UNDP in the 2001 Indonesia Human Development Report argues that part of the reason why the coverage of *Posyandu* is declining is that there has been a significant reduction in public support for the family welfare movement (*PKK*) (Marks, 2003) that used to back up some of *Posyandu* activities such as home gardening and supplementary feeding practices.

MACRO-ENVIRONMENTAL FACTORS

The last factors that might have a significant impact on the patronage of *Posyandu* and the improvement of child health outcomes are broader macro-environmental factors: factors outside the domain of the Indonesian health system that might affect the use of health care services and/or enhance the improvement of child health outcome indirectly. The Asian monetary crisis that reduced people's ability to pay for health services, and the mass media campaign to improve child health outcomes, are hypothesized as the most influential macro-environmental factors causing the current paradox.

Monetary Crisis

Indonesia's economic crisis began in 1998 affected the prices, availability, and quality of number of goods and services (Frankenberg, Thomas and Beegle, 1999). Moreover, a large proportion of the respondents in the IFLS reported facing detrimental consequences from increases in the price of food, fuel and health services (Frankenberg, Thomas and Beegle, 1999).

This situation led some people who were not employed prior to the crisis to enter the workforce to increase their family income. As a result, fewer people were available to undertake unpaid or voluntary work and participation in neighborhood improvement projects and *Posyandu* declined significantly for both men and women between 1997 and 1998 (Frankenberg, Thomas, and Beegle, 1999).

Prior to the economic crisis, economic factors were decisive in mothers' decisions to attend *Posyandu* (Kollmann, 1992). The majority of Indonesian families did not have much money to spend on health care. Since *Posyandu* is free, at least before the crisis, it was regarded as the cheapest way to obtain a form of health care (Kollmann, 1992). Since the economic crisis struck in 1998, the situation seems to have changed dramatically. Although *Posyandu* remains the cheapest option for obtaining health care, the daytime opening hours seem to be the major obstacle to attendance. Mothers who are in employment during the day lack the time to take their

children to *Posyandu*, but their employment enables them to pay for more convenient forms of health care.

Decentralisation

With the start of a reformation in Indonesia that began in 2000, there was a paradigm change from centralistic to decentralist, in Indonesian called "*Otonomi Daerah*" (Saefullah, 2005). It is hoped that with decentralisation, disparity between provinces or districts will be reduced throughout Indonesia. The top-down planning of more than 30 years of centralised health programs is no longer regarded as appropriate (Saefullah, 2005) and has been heavily criticised as neglecting the variability of problems in each district. It is believed that bottom-up planning will suit the variations and specific health problems in the district level.

Mass Media Campaign

A Systematic review by Latief, *et al*. (2000) indicates that many of the health and nutritional promotion campaigns conducted through *Posyandu* were ineffective. The findings from UNICEF/UnHas study reveals incorrect knowledge and beliefs regarding infant supplementary feeding practices among significant numbers of *Posyandu kader* (Latief, *et al*., 2000). Thus, the World Bank suggested that the emphasis should be given to other opportunities for social marketing of health and nutritional campaigns particularly through television and radio (World Bank, 2005).

Social Control

According to Kollmann's (1992) study, the influence of social control cannot be neglected in determining the utilisation of *Posyandu* by mothers. Kollmann (1992) argues that the more remote the village is, the stronger the social control in the community. Prior to the commencement of the *Posyandu,* volunteers would instruct mothers to go to *Posyandu* (Kollmann, 1992). The Kollmann (1992) study reveals that isolated location associated with greater social control seemed to have a positive influence on *Posyandu* utilisation. The current trend of the decline coverage of *Posyandu* might be a result of the weakening of local social control as fewer villages were isolated due to improvements in infrastructure such as transportation (road) and communication (mass media).

CONCLUSION

Several factors might contribute to the observed anomaly of the decreasing coverage of Posyandu but improving under-five children nutritional status during 1997 to 2000 as reflected by improved height for age index. The factors include: internal factors within *Posyandu* like limitation in the quality of *kader*, and the displacement of the family planning program which used to be combined with *Posyandu* activities, giving *Posyandu* extensive support and materials (Rusydi, 2005); and also external factors such as the role of private health care providers or NGOs, and shifts in consumer preferences (Marks, 2003). Broader macro-environmental factors also have had a significant impact on the performance and patronage of *Posyandu*. The monetary crisis that hit Indonesia in 1998 resulted in a reduction of both men's and women's participation in a variety of community development activities such as neighborhood improvement projects and the *Posyandu* (Frankenberg, Thomas, and Beegle, 1999). Even though this literature review aims to portray Indonesia as a whole, consideration of site to site evaluation should be acknowledged. As Marks (2003) argues that the current model of *Posyandu* is still effective in some areas, but no longer appropriate for others.

REFERENCES

BKKBN. 2004. *Indonesia Reproductive Health Profile, 2003*, National Family Planning Coordinating Agency, Jakarta.

BPS. 2004. *Country Paper, Oficial Statistics and its Development in Indonesia*, BPS-Statistic Indonesia, Jakarta.

Brotowasisto O, Gish R, Malik, and Sudharto P. 1988. 'Health care financing in Indonesia', *Health Policy and Planning*, Vol. 3, No. 2, pp. 131–40.

dePee S, Diekhans J, Stallkamp G, Kies L, Moench-Pfanner R, Martini E, Sari M, Stormer A, Kosen S, and Bloem MW. 2002. *Breastfeeding and Complementary Feeding Practices in Indonesia*, Hellen Keller, Jakarta.

Elfindri and Dasvarma GL. 1996. 'Child Malnutrition in Indonesia', *Bulletin of Indonesian Economic Studies*, Vol. 32, No. 1, pp. 97–111.

Eng PVD. 2000. *Indonesia's Economy and Standard Living in the 20th Century*, Asian Development Bank, Jakarta.

Frankenberg E, Thomas D, and Beegle K. 1999. *The Real Cost of Indonesia's Economic Crisis: Preliminary Findings from the Indonesia Family Life Surveys*, RAND and UCLA, Santa Monica.

Gibson R. 2005. *Principles of Nutritional Assessment*, Second Edition edn, Oxford University Press, New York.

Irawati A. 2000. *Kajian Pelaksanaan Revitalisasi Posyandu pada Masyarakat Nelayan dan Petani di Propinsi Jawa Barat*, Departemen Kesehatan dan Kesejahteraan Sosial, viewed 14 September 2006 2006.

Kollmann NGE. 1992. 'The Management and Utilization of Posyandu in Central Java: A Case Study', paper presented to Health Care in Java, Past and Present, Leiden.

Latief D, Wibisono, Sastroamodjojo S, Sastroasmoro S, Kurnawan A, Hernawati I, Minarto, and Bernstein B. 2000. *Family Nutrition and Under-Five Child Health (FN-CH) Program in Indonesia, A Review of the Programs and their Overall Achievements, with Recommendations for Priority Actions to Reduce Remaining Gaps and Disparities*, The Directorate-General of Community Health, Ministry of Health, Republic of Indonesia, Jakarta.

Marks G. 2003. 'Protein-Energy Malnutrition in Indonesia: Key Challenges and Options', Australian Centre for International and Tropical Health and Nutrition (ACITHN) and School of Population Health University of Queensland.

McPake B and Mills A. 2000. 'What can we learn from international comparison of health systems and health systems reform?' *Bulletin of the World Health Organization*, Vol. 78, No. 6, pp. 811–20.

MOH. 2000. *Country Health Profile, Indonesia*, Ministry of Health, Jakarta.

Munir LZ. 1990, 'The Role of Religious Women's NGOs in Promoting Child Survival and Development in Indonesia', *Asia-Pacific Journal of Public Health*, Vol. 4, No. 4, pp. 274–6.

PR. 2006. 'Revitalisasi Posyandu Temui Banyak Kendala', *Tempo Interaktif*, p. 1.

Rohde JE. 1993. 'Indonesia's Posyandus: Accomplishment and Future Challenges', in JE Rohde, M Chatterjee, and D Morley (eds), *Reaching Health for All*, Oxford University Press, Delhi, pp. 135–57.

Rohde JE and Hendrata L. 1982. *Development from Below, Transformation of Village-Based Nutrition Projects to a National Family Nutrition Program in Indonesia, in Scrimshaw, N.S. & Wallerstein, M.B. 1982. Nutrition Policy Implementation, Issues and Experience*, Plenum Press, New York.

Rusydi. I 2005. *Program Revitalisasi Posyandu Rp 700 Miliar Tak Jelas*, Tempo Interaktif, 14 September 2006.

Shield L and Hartanti LE. 2006. 'Primary Care in Indonesia', *Journal of Child Health Care*, Vol. 10, No. 1, pp. 4–8.

Strauss J, Beegle K, Dwiyanto A, Herawati Y, Pattinasarany D, Satriawan E, Sikoki B, Sukamdi and Witoelar F. 2002. *Executive Summary, Indonesian Living Standards Three Years After the Crisis: Evidence From The Indonesia Family Life Survey*, United States Agency for International Development, Jakarta Mission, Jakarta.

USAID. 1988. *Strategic Plan. 1989–1994*, Office of Population and Health. USAID/Indonesia, Jakarta.

WHO. 2006. *Macroeconomics and Health Initiatives in Indonesia*, World Health Organization, Geneva.

WorldBank. 2005. *Indonesia: Ideas for the Future; Feeding Indonesia*, World Bank, viewed 20 September 2006.